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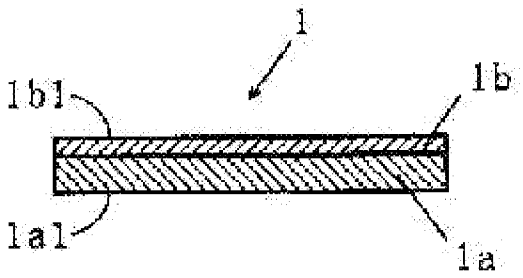
(54) SHRINK LABEL FOR SQUARE PLASTIC BOTTLE AND SQUARE PLASTIC BOTTLE WITH SHRINK LABEL

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a shrink label for a square plastic bottle so as to impart excellent lubricating property to a square plastic bottle.

SOLUTION: A shrink label 1 for a square plastic bottle has an overcoat agent layer 1b on the face of the label which does not come into contact with the square plastic bottle. The friction coefficient of the outer surface 1b1 of the overcoat agent layer is ≤0.3 of the outer surface of an overcoat agent layer of a similar shrink label and is ≤ 0.45 of that of a stainless steel sheet. The overcoat agent may contain a resin and a lubricant. The perforations of the shrink label may be formed in the position corresponding to the corner in the side part of the square plastic bottle. The sealing part of the shrink label may be formed in the position corresponding to the corner of the side part of the bottle.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention relates to the square-shaped plastic bottle excellent in slide nature with the shrink label for square-shaped plastic bottles, and this shrink label.
[0002]
[Description of the Prior Art]As plastic bottles, such as a PET bottle (bottle made from polyethylene terephthalate) of bevel uses, such as soft drinks and a coffee drink, the square-shaped bottle in which a section has the shape of a diversification type, such as an approximately square type, is used these days. Such a square-shaped bottle has a neck, a shoulder, a flank (drum section), a pars basilaris ossis occipitalis, etc. as shown by drawing 4 - 6.
Usually, the flank is covered at least with the shrink label.
in drawing 4 -- 11 -- as for the pars basilaris ossis occipitalis of the square-shaped bottle 21 and 31, a square-shaped plastic bottle (square-shaped bottle) and 21a of the shoulder of the square-shaped bottle 21 and 21c are [the neck of the square-shaped bottle 21 and 21b] caps a shrink label and 21. [of the flank of the square-shaped bottle 21, and 21 d] This shrink label 11 is a full shrink label covered from the neck 21a of the square-shaped bottle 21 to the pars basilaris ossis occipitalis 21d.
[0003]moreover -- in drawing 5 -- 12 -- as for the pars basilaris ossis occipitalis of the square-shaped bottle 22 and 32, a square-shaped plastic bottle (square-shaped bottle) and 22a of the shoulder of the square-shaped bottle 22 and 22c are [the neck of the square-shaped bottle 22 and 22b] caps a shrink label and 22. [of the flank of the square-shaped bottle 22, and 22 d] This shrink label 12 is a semi full shrink label covered from the shoulder 22b of the square-shaped bottle 22 to the pars basilaris ossis occipitalis 22d.
[0004]setting to drawing 6 further again -- 13 -- as for the pars basilaris ossis occipitalis of the square-shaped bottle 23 and 33, a square-shaped plastic bottle (square-shaped bottle) and 23a of the shoulder of the square-shaped bottle 23 and 23c are [the neck of the square-shaped bottle 23 and 23b] caps a shrink label and 23. [of the flank of the square-shaped bottle 23, and 23 d] This shrink label 13 is a half shrink label which has covered from the shoulder 23b of the square-shaped bottle 23 to near the center section of the flank 23c (namely, the upper part side of the side of the square-shaped bottle 23).
[0005]
[Problem(s) to be Solved by the Invention]However, when a vending machine (vendor) is loaded with such a square-shaped plastic bottle, even if consumers put money into the predetermined place of a vendor and

choose goods, A square-shaped plastic bottle does not start from the install stand in a vending machine, a predetermined passage is not passed or fallen, but there is a possibility that it may not come out in goods output port, and it had become a problem.

[0006]Therefore, the purpose of this invention is to provide the shrink label for square-shaped plastic bottles which can give the slide nature excellent in the square-shaped plastic bottle. Other purposes of this invention can pass or drop the predetermined passage in a vending machine, and can load a vending machine with a square-shaped plastic bottle with a shrink label certainly, And it is in providing the square-shaped plastic bottle with a shrink label which can pass or fall the predetermined passage in a vending machine, and can reach to goods output port certainly.

[0007]

[Means for Solving the Problem]If it equips with a shrink label of an outside surface which has a specific coefficient of friction so that a body side of a square-shaped plastic bottle may be covered as a result of inquiring wholeheartedly, in order that this invention persons may attain said purpose, Even if a vending machine was loaded with this square-shaped plastic bottle with a shrink label, it started from an install stand in a vending machine certainly, a predetermined passage was passed or fallen, it found out that it could come out in goods output port, and this invention was completed.

[0008]Namely, this invention is a shrink label which has an overcoat agent layer in a field by the side of non-contact to a square-shaped plastic bottle, A coefficient of friction of an outside surface by the side of this overcoat agent layer is a shrink label for square-shaped plastic bottles characterized by being 0.3 or less to an outside surface by the side of an overcoat agent layer of same shrink label. This invention is a shrink label which has an overcoat agent layer in a field by the side of non-contact to a square-shaped plastic bottle, and a coefficient of friction of an outside surface by the side of this overcoat agent layer receives a stainless steel plate, A shrink label for square-shaped plastic bottles being 0.45 or less is provided.

[0009]It is preferred that an overcoat agent contains resin and lubricant in this invention. It is preferred for a shrink label of this invention that it is a section abbreviation square type shrink label for square-shaped plastic bottles.

[0010]This invention provides a square-shaped plastic bottle with a shrink label, wherein it is equipped with said shrink label for square-shaped plastic bottles so that an approximately whole area of the bottle body side may be covered.

[0011]Perforations of a shrink label may be formed in a corner in a flank of a square-shaped plastic bottle in a square-shaped plastic bottle with a shrink label of this invention. A seal part of a shrink label may be formed in a corner in a flank of a square-shaped plastic bottle.

[0012]

[Embodiment of the Invention]Hereafter, this invention is explained in detail, referring to drawings if needed. Drawing 1 is a schematic diagram showing an example of the square-shaped plastic bottle 2 in which it was equipped with the shrink label 1 of this invention. In drawing 1, 1 is a shrink label and 2 is a square-shaped plastic bottle (a "square-shaped bottle" may only be called hereafter). A sliding-surface part [in /a / 2 / 2c can set the neck of the square-shaped bottle 2 and 2b to the shoulder of the square-shaped bottle 2 can be set to the flank (drum section) of the square-shaped bottle 2, and / in 2c1 / the flank 2c] (flat-surface part), a corner [in / in 2c2 / the flank 2c], and 2 d are the partes basilaris ossis occipitalis of

the square-shaped bottle 2. 4 is the perforations formed in the shrink label 1, and 5 is a seal part in the shrink label 1. 3 is a cap.

[0013]the shrink label 1 is a full shrink label as shown in drawing 1 -- the whole surface (namely, whole surface of the flank 2c) of the body side of the square-shaped bottle 2 -- a wrap -- it is equipped like. Specifically, the square-shaped bottle 2 is covered from the neck 2a to the periphery of the pars basilaris ossis occipitalis 2d through shoulder 2b and the flank 2c with the shrink label 1 as a full shrink label.

[0014]The shrink label 1 is constituted by the substrate 1a, this substrate 1a, and the overcoat agent layer 1b laminated as shown in drawing 2. In the shrink label 1, the field (inner surface) one a1 by the side of the substrate 1a is a field by the side of contact to the square-shaped bottle 2, and the field (outside surface) one b1 by the side of the overcoat agent layer 1b is a field by the side of non-contact to the square-shaped bottle 2.

[0015]As opposed to the outside surface by the side of the overcoat agent layer of the shrink label whose coefficient of friction of the outside surface one b1 by the side of the overcoat agent layer 1b of the shrink label 1 is the same, It is 0.3 (for example, 0.1-0.3) or less, and when especially a shrink label is a full shrink label, it is preferred that it is 0.1-0.2. That is, the coefficient of friction between [between the shrink labels of this invention] outside surfaces is 0.3 or less. If this coefficient of friction exceeds 0.3, the slide nature of a square-shaped plastic bottle with a shrink label falls, and when loading a vending machine with this square-shaped bottle, or when taking out, about a predetermined passage, it will pass, or will be hard to fall and will become.

[0016]The shrink label 1 since it is the same as that of the above, The coefficient of friction to the stainless steel plate of the outside surface one b1 by the side of the overcoat agent layer 1b is 0.45 (for example, 0.2-0.45) or less, and when especially a shrink label is a full shrink label, it is preferred that it is 0.2-0.35.

[0017]In this invention, a coefficient of static friction and/or a dynamic friction coefficient are employable as a coefficient of friction of the outside surface one b1 in the shrink label 1. As a coefficient of friction, a coefficient of static friction and a dynamic friction coefficient (especially coefficient of static friction) are adopted suitably. That is, it is preferred that the coefficient of static friction and dynamic friction coefficient (especially coefficient of static friction) to the same outside surface as this shrink label are 0.3 or less, and/or it is preferred that the coefficient of static friction and dynamic friction coefficient (especially coefficient of static friction) to a stainless steel plate are 0.45 or less.

[0018]The coefficient of static friction in this invention and a dynamic friction coefficient can be measured based on JIS K 7125. The measured value measured to the outside surface of a stainless steel plate or the same shrink label can be used for this coefficient of friction (a coefficient of static friction, a dynamic friction coefficient).

[0019]The overcoat agent layer 1b is formed of the overcoat agent. The overcoat agent contains resin and lubricant. An overcoat agent is independent, or two or more sorts can use it, mixing.

[0020]Especially as resin of an overcoat agent, it is not restricted, for example, thermoplastics, such as polyvinyl chloride, polyvinyl acetate, cellulose type resin, acrylic resin, and urethane system resin, is used suitably. Resin is independent, or two or more sorts can use it, mixing.

[0021]Especially as lubricant, it is not restricted but inorganic system either organic system lubricant or lubricant can be used. As lubricant, silicone oil, particle state solid matter (especially particle-like solid matter), a wax, etc. are mentioned, for example. Lubricant is independent, or two or more sorts can use it,

mixing. As said particle state solid matter, an inorganic particle, organic particles, etc. are mentioned, for example. In this invention, the combination of silicone oil or an inorganic particle (especially inorganic particles), and a wax is suitably used as lubricant.

[0022]As lubricant, in a wax, for example Microcrystallin wax, Oxidation microcrystallin wax, paraffin, oxidation paraffin, Mineral system waxes, such as a montan wax; Polyethylene wax, polypropylene wax, Oxidized polyethylene wax, oxidation polypropylene wax, chlorination polyethylene wax, Chlorination polypropylene wax, an ethylene-acrylic acid copolymer wax, Synthetic waxes, such as an ethylene-vinylacetate copolymer wax and a polycarbonate wax; A Japanese lacquer low, Natural wax, such as a dense low and white low, wax, spermaceti, vaseline, lanolin, carnauba wax, the Kane wax, a candelilla wax, a shellac wax, a rice wax, and a sugar wax, etc. are contained.

[0023]In particle state solid matter, silica, talc, mica, kaolin, bentonite, Clay, black lead, graphite fluoride, carbon black, titanium oxide, a zinc oxide, Magnesium oxide, boron nitride, molybdenum disulfide, a tungsten disulfide, Calcium carbonate, calcium sulfate, titanic acid calcium, calcium phosphate, Calcium hydroxide, aluminium hydroxide, magnesium hydroxide, glass powder, Inorganic particles, such as alumina and a metal powder; Higher alcohol, such as stearyl alcohol, Higher-fatty-acid ester, such as higher fatty acid, such as stearic acid, and butyl stearate, Partial ester of fatty acid and polyhydric alcohol, such as a glycerine fatty acid ester, Higher fatty acid amide, such as octadecanamide and ethylene-bis-stearylamide, Barium stearate, calcium stearate, zinc stearate, The salt of higher fatty acid, such as aluminum stearate and magnesium stearate (metal soap), Polyacetal, polytetrafluoroethylene, vinylidene fluoride, ethylene difluoride, poly(meta) acrylic acid metal salt, polyacrylonitrile, polyacrylic acid amide, melamine system resin, phenol system resin, starch powder, cellulose powder, Organic particles, such as Teflon (registered trademark) powder, etc. are contained.

[0024]When using as lubricant combining waxes, such as polyethylene wax, and silicone oil, both rate, choosing from the wide range is possible -- wax/silicone oil =1 / 99 - 99/1 -- it can choose from the range of 10 / 90 - 90/10 preferably. [for example,]

[0025]In this invention, the coefficient of friction (outside surface between shrink labels) (a dynamic friction coefficient and/or a coefficient of static friction) to the same outside surface as resin and the shrink label of this invention an overcoat agent 0.3 or less. And/or, lubricant of the content that the coefficient of friction (a dynamic friction coefficient and/or a coefficient of static friction) to a stainless steel plate becomes 0.45 or less is included. It is preferred that it is the content that the dynamic friction coefficient of the outside surface between shrink labels is 0.3 or less, and the coefficient of static friction of the outside surface between shrink labels becomes 0.3 or less as an overcoat agent, And/or, it is preferred that it is the content that the dynamic friction coefficient to a stainless steel plate is 0.45 or less, and the coefficient of static friction to a stainless steel plate becomes 0.45 or less. Specifically, the content of lubricant is about 3-8 weight sections preferably 0.5 to 10 weight section to resin 100 weight section in an overcoat agent, for example. If there is too little content of lubricant, the slide nature of a square-shaped plastic bottle with a shrink label will fall. On the other hand, when too large, there is a possibility that the adhesion of the overcoat agent layer to a substrate may fall, or the wearing nature of a shrink label to a square-shaped plastic bottle may worsen.

[0026]The thickness in particular of the overcoat agent layer 1b is not restricted, for example, can be preferably chosen from the range of about 1-3 micrometers 0.5-5 micrometers.

[0027]The substrate 1a of the shrink label 1 can be formed with a plastic film. As a raw material of said plastic film, thermoplastics, such as polyester, styrene resin, polyolefines (polyethylene, polypropylene, etc.), and polyvinyl chloride, is used suitably. The raw material of a plastic film is independent, or two or more sorts can use it, mixing.

[0028]In the substrate 1a, since polyester, styrene resin, etc. have low slide nature, the shrink label 1 which can demonstrate the outstanding slide nature is obtained by laminating said overcoat agent layer 1b.

[0029]Various polyester which comprises a dicarboxylic acid component and a diol component is contained in polyester of the substrate 1a. As said polyester, using terephthalic acid and ethylene glycol as the main ingredients of a dicarboxylic acid component and a diol component respectively as a copolymer component, Dicarboxylic acid, such as isophthalic acid, phthalic acid, adipic acid, sebacic acid, and naphthalene dicarboxylic acid, Copolymerized polyester using diol components, such as diethylene-glycol, neopentyl glycol, polyalkylene glycol, 1, and 4-cyclohexane dimethanol, is used suitably.

[0030]The substrate 1a of this invention may comprise any of the monolayer film and the multilayer film. The thickness in particular of the substrate 1a is not restricted, for example, can be preferably chosen from the range of about 30-60 micrometers 20-80 micrometers.

[0031]After fabricating the shrink label 1 of this invention by publicly known methods, such as an extrusion method and the calendar method, it laminates an overcoat agent layer with coating methods, such as printings (for example, gravure printing etc.), on the surface of the film obtained by carrying out stretching treatment, and can manufacture it on it. The transparent thing of an overcoat agent layer is preferred.

[0032]Which method of a tenter method and a tube method can also perform extension. Stretching treatment is a proper temperature which took into consideration the glass transition temperature etc. of the polyester which constitutes a film, for example, and is performed in the direction [usual and cross direction (TD direction)] corresponding to the hoop direction of a container by extending about 4 to 5 times preferably 1.5 to 8 times. Stretching treatment can be performed in the direction [usual and length direction (MD directions)] which intersects perpendicularly in said direction if needed with low draw magnification (for example, about 1.5 or less times). The heat setting which passes an about 60-90 ** heating zone for abbreviation 1 to 10 seconds is usually performed after extension. In this way, the film obtained has a stacking tendency in the main extension direction, and shows big heat contraction nature in this direction.

[0033]A character, a design, etc. can also be printed to the shrink label 1. The field which prints a character, a design, etc. is usually the field (inner surface) one a1 by the side of contact to the square-shaped bottle 2 in the shrink label 1.

[0034]The shrink label 1 of this invention applies an overcoat agent to a substrate, After printing a character and a design if needed, it cuts to the long band-like one of desired width, For example, after carrying out an overcoat agent layer outside (carrying out a character and the printing surface of a design inside), rounding off to tubed so that said main extension direction may turn into a hoop direction, and pasting up the both-ends neighborhood with adhesives etc., it cuts to the desired length if needed, and is used as a tubed shrink label.

[0035]At least, if the shrink label of this invention is a wrap thing, the flank of a square-shaped plastic bottle, The gestalt in particular is not restricted, but may have a gestalt of a full shrink label as shown by drawing 1 or 4, and may have a gestalt of a semi full shrink label as shown by drawing 5. It may have the so-called gestalt of a wrap and a half shrink label for the side upper part of a square-shaped plastic bottle

as shown by drawing 6.

[0036]It is preferred to have a gestalt of the full shrink label which has covered the approximately whole area of the flank of a square-shaped plastic bottle at least (that is, from a shoulder to the pars basilaris ossis occipitalis is covered at least), or a semi full shrink label as a shrink label in this invention.

[0037]A heat shrinkage rate in particular is not restricted in the shrink label of this invention. For example, as a heat shrinkage rate, when it processes for 10 seconds at 90 **, in one way X (direction corresponding to the hoop direction of a container), it is 40 to 80%, and is 50 to 75% preferably. Contracting may become insufficient when this heat shrinkage rate is less than 40%. When said heat shrinkage rate exceeds 80%, since distortion arises on a label, it is not desirable.

[0038]When the raw material in which said heat shrinkage rate constitutes the shrink label 1, for example is polyester, It can adjust to said within the limits by choosing suitably the kind of a dicarboxylic acid component and diol component, its percentage (especially said aliphatic dicarboxylic acid component comparatively), extension conditions (extension temperature, draw magnification, etc.), heat setting conditions (temperature, time, etc.), etc.

[0039]It will not be limited especially if it is a plastic bottle which has the sliding-surface part (flat-surface part) 2c1 in the flank (drum section) 2c as the square-shaped bottle 2. As a typical example of the square-shaped bottle 2, as shown in drawing 3, a cross section abbreviation square type square-shaped plastic bottle is mentioned. Drawing 3 is an outline sectional view about the drum section 2c of the square-shaped bottle 2. Although the drum section 2c comprises the four sliding-surface parts 2c1 and the four corners 2c2, it serves as a cross section abbreviation square type as a whole.

[0040]As the square-shaped bottle 2, the blow molding bottle etc. which consist of polyester, such as polyethylene terephthalate (PET), polyethylenenaphthalate (PEN), and polybutylene terephthalate (PBT), are mentioned. Although the shape in particular of the sliding-surface part (flat-surface part) 2c1 in the flank (drum section) 2c is not restricted, Usually, it has the approximately square type concave which is the shape which absorbs the lowered pressure and can control modification of a bottle for example, by which the height which rose slightly was formed in the center section, and has become approximate plane-like as the whole sliding-surface part in many cases.

[0041]The square-shaped plastic bottle 2 with a shrink label of this invention, For example, the shrink label 1 of this invention formed in tubed [said] is supplied to an automatic label mounting device, After cutting to required length, it can manufacture by inserting in the square-shaped plastic bottle 2 usually filled up with contents continuously so that the approximately whole area or predetermined region of the bottle body side may be covered, carrying out heat contraction to it with heating, and equipping it. Although heat contraction of the shrink label 1 inserted in the square-shaped bottle 2 may be performed by which a publicly known method, it is preferred to carry out heat contraction from the reason for telling temperature uniformly and improving a result of a label by passing the steam tunnel of about 80-100 **, for example.

[0042]The square-shaped plastic bottle with a shrink label of this invention, When a vending machine is loaded and it comes out in goods output port from the part (install stand) with which it is this loaded, it is required to begin to slide on this plastic bottle from to make an injection possible smoothly into a vending machine and the part with which it is loaded. The square-shaped plastic bottle with a shrink label of this invention has a low coefficient of friction of the outside surface of the shrink label which has covered the body side of the square-shaped bottle in approximately whole area. Therefore, even if the angle of an

install stand is small, it can begin to slide on the square-shaped plastic bottle with a shrink label in which it filled up with the drink in the square-shaped bottle easily. For example, the angle of the install stand of a square-shaped bottle is usually about 15 degrees in a vending machine. The square-shaped plastic bottle with a shrink label of this invention, When it fills up with a predetermined drink in a square-shaped bottle and a coefficient of static friction [as opposed to 0.3 or less and a stainless steel plate in the coefficient of static friction between / between the same shrink labels / outside surfaces] is 0.45 or less, within a vending machine, From an install stand, it can start easily, and a predetermined passage can be passed or fallen. An injection into the vending machine of a plastic bottle can be performed smoothly similarly.

[0043]When coming out in goods output port from the install stand in a vending machine, a predetermined passage is passed or fallen after starting the install stand in a vending machine. At this time, the sliding-surface part 2c1 (namely, surface part where square-shaped bottles touch when it loads with two or more square-shaped bottles into a vending machine) touches the wall of said passage among the flanks 2c of the square-shaped bottle 2. In this invention, the square-shaped plastic bottle (square-shaped bottle 2) with a shrink label, Since the whole surface (sliding-surface part 2c1) of the bottle body side is covered with the shrink label of this invention, When a dynamic friction coefficient [as opposed to 0.3 or less and a stainless steel plate in the dynamic friction coefficient between / between the same shrink labels / outside surfaces] is 0.45 or less, The square-shaped bottle 2 does not stop in a passage by friction between both, and the square-shaped bottle 2 comes out in goods output port certainly, even if the sliding surface 2c1 touches the wall of the passage through which it passes, after starting easily from an install stand. In especially a vending machine, the square-shaped bottle 2, Since it is loaded continuously and this bottle 2 is in the state where the lateral portion touched mutually, It is [that slide nature of the outside surfaces between the shrink labels with which this bottle 2 was equipped should be made good] important to make the dynamic friction coefficient in the outside surfaces between these shrink labels or less into 0.3 (0.2 or less [Preferably]).

[0044]Thus, the square-shaped plastic bottle with a shrink label of this invention, When both the coefficient of static friction in the outside surfaces between these shrink labels and a dynamic friction coefficient are 0.3 or less, And/or, when both a coefficient of static friction and the dynamic friction coefficient to a stainless steel plate are 0.45 or less, even if the usual or conventional vending machine is loaded, It can supply one by one, without getting it blocked at the time of charge, and, moreover, can start from an install stand easily, a further predetermined passage can be passed or fallen, and goods output port can be reached.

[0045]Since this label outside surface is slippery from the bottle outside surface where it is not equipped with the label and the sex is too good when a shrink label is a half shrink label, Since it may not slide uniformly within a vending machine, it is preferred that the coefficient of friction to within the limits of 0.2-0.3 and/or a stainless steel plate carries out the coefficient of friction to the same outside surface as this label within the limits of 0.3-0.45.

[0046]In the square-shaped plastic bottle with a shrink label of this invention. The perforations 4 for cutting can be given to a lengthwise direction so that it may be easy to exfoliate a shrink label from a square-shaped bottle also in consumers' stage for recycling (for example, recycling of polyethylene terephthalate resin) of a square-shaped bottle, as shown in drawing 1. It is preferred to be formed in a lengthwise direction in the position of the corner 2c2 in the flank 2c as the perforations 4. Thus, since the slide nature

within a vending machine will not be affected in order that there may be no perforations 4 in the sliding-surface part 2c1 of the square-shaped bottle 2 if the perforations 4 are formed in the lengthwise direction in the corner 2c2 of the flank 2c, the slide nature of the square-shaped bottle 2 within a vending machine is not reduced.

[0047]In the square-shaped plastic bottle with a shrink label of this invention, when making the shrink label 1 tubed, the seal part 5 (center seal part) which pasted up the both-ends neighborhood with adhesives etc. is formed, as shown in drawing 1, but. As for the seal part 5 of this shrink label 1, it is preferred to be formed in a lengthwise direction in the corner 2c2 in the flank 2c. Thus, since the seal part 5 will not affect the slide nature within the vending machine of the square-shaped bottle 2 if the seal part 5 is formed in the lengthwise direction including the corner 2c2 of the flank 2c, the slide nature of the square-shaped bottle 2 within a vending machine is not reduced.

[0048]The perforations 4 and the seal part 5 may be formed in the same corner, and may be provided in a different corner. As for the perforations 4 and the seal part 5, being provided in a different corner is preferred.

[0049]The shrink label of this invention is useful as a shrink label to the square-shaped plastic bottle with which a vending machine is loaded.

[0050]

[Effect of the Invention]Since the slide nature excellent in the square-shaped plastic bottle can be given according to the shrink label of this invention, Even if it loads a vending machine with this square-shaped plastic bottle with a shrink label, a square-shaped plastic bottle is not got blocked within a vending machine, but can come out in goods output port certainly.

[0051]

[Example]Hereafter, this invention is not limited by these examples although this invention is explained more to details based on an example. The coefficient of friction (the coefficient of friction to a stainless steel plate, the coefficient of friction between outside surfaces) was measured by the following method.

[0052](Coefficient of friction to a stainless steel plate) About the shrink label, the coefficient of static friction and the dynamic friction coefficient were measured to the stainless steel plate (SUS-304) based on JIS K7125.

[0053](Coefficient of friction between outside surfaces) About the shrink label, based on JIS K 7125, the outside surfaces of this shrink label were piled up and the coefficient of static friction and the dynamic friction coefficient were measured.

[0054]an example polyester system film (the Toyobo Co., Ltd. make and a trade name "S7561".) one surface with a film thickness of 50 micrometers -- an overcoat agent (the Dainippon Ink & Chemicals, Inc. make.) A trade name "fine lap 901 slide OP varnish No.2", resin : VCM/PVC vinyl acetate copolymerization resin / cellulose type resin, polyethylene wax and silicone oil are contained 5 in all% of the weight -- **** -- it applied by gravure printing so that thickness might be set to 0.5-2 micrometers, and the shrink label which has an overcoat agent layer was obtained. Said shrink label was rounded off to tubed so that the cross direction of a base film might turn into a hoop direction, both ends were welded with heat, and the shrink label continuity tubed [long] was acquired. After supplying this shrink label continuity to an automatic label mounting device and cutting on each label, coffee with the section abbreviation square type which carried out hot restoration (temperature of 85 **). It is attached outside so that the perforations

of a label may be formed in the bottle made from polyethylene terephthalate (PET bottle) whose content volume is 500 ml at the corner of a bottle, The steam tunnel (temperature of 90 **) was passed, heat contraction was carried out, and the square-shaped plastic bottle with a shrink label as shown in drawing 1 was obtained. Thus, about the PET bottle containing coffee equipped with a shrink label, the coefficient of friction (the coefficient of friction to a stainless steel plate, the coefficient of friction between outside surfaces) about the outside surface by the side of the overcoat agent layer of a shrink label was measured, and slide nature was evaluated. A measurement result is shown in Table 1.

[0055]The vending machine by SANYO Electric Co., Ltd. actually sold is loaded with the PET bottle containing coffee equipped with a shrink label (goods), When investigated about whether these goods (1000 individuals) come out in goods output port (mounting evaluation), all 1000 pieces came out in goods output port.

[0056](Comparative example) The polyester system film (the Toyobo Co., Ltd. make, trade names "S7561", film thickness of 50 micrometers) was used as the shrink label as it was, and the PET bottle containing coffee equipped with a shrink label was obtained like the example using this shrink label. About the PET bottle containing coffee equipped with the shrink label concerning a comparative example, like the example, the coefficient of friction (the coefficient of friction to a stainless steel plate, the coefficient of friction between outside surfaces) was measured, and slide nature was evaluated. These results are shown in Table 1. When mounting evaluation as well as an example was performed, eight or more goods did not come out in goods output port among 1000 pieces.

[0057]

[Table 1]

表 1

	実施例	比較例
ステンレス鋼板に対する摩擦係数		
静摩擦係数	0．35	0．65
動摩擦係数	0．34	0．60
外面同士の摩擦係数		
静摩擦係数	0．19	0．36
動摩擦係数	0．18	0．34

[0058]The PET bottle containing coffee equipped with the shrink label concerning an example has [both a coefficient of static friction and a dynamic friction coefficient] a coefficient of friction smaller than Table 1. Therefore, the PET bottle containing coffee equipped with the shrink label concerning an example has good slide nature. Even if the PET bottle containing coffee equipped with the shrink label concerning an example has good mounting evaluation and it actually loaded the vending machine with it, certainly or almost coming out even in goods output port was checked.

[Translation done.]